



**Kinetic Power, LLC**  
**P.O. Box 32482**  
**Santa Fe, N.M. 87594**  
**Phone: (505) 225-1758**

June 1, 2020

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

Re: Preliminary Permit Application for the Beclabito Hydroelectric Energy Storage Center

Dear Secretary Bose,

Please find attached the application for preliminary permit for the Beclabito Hydroelectric Energy Storage Center. If you have any questions or need additional information, please contact us at the provided email and phone number.

Sincerely,

Thomas J. Conroy  
Co-Founder  
Kinetic Power, LLC  
[tconroy@kineticpowerco.com](mailto:tconroy@kineticpowerco.com)

J. Tracy Livingston  
Co-Founder  
Kinetic Power, LLC  
[tlivingston@kineticpowerco.com](mailto:tlivingston@kineticpowerco.com)

**BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION**  
**APPLICATION FOR PRELIMINARY PERMIT**

Beclabito Hydroelectric Energy Storage Center

Project No: \_\_\_\_\_

Kinetic Power, LLC  
P.O. Box 32482  
Santa Fe, N.M. 87594

June 1, 2020

**VERIFICATION STATEMENT**

The attached application for a preliminary FERC permit is executed in the:

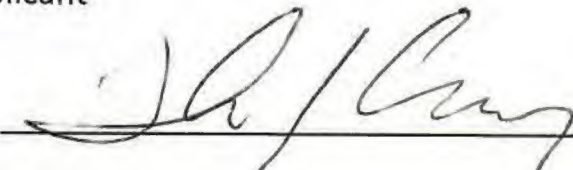
State of New Mexico

County of Santa Fe

By: Thomas Conroy  
Kinetic Power, LLC  
P.O. Box 32482  
Santa Fe, N. M. 87506

Being duly sworn depose(d) and say(s) that the content of this Preliminary Permit Application are true to the best of (his or her) knowledge or belief. The undersigned Applicant has signed the application this 28<sup>th</sup> day of May, 2020.

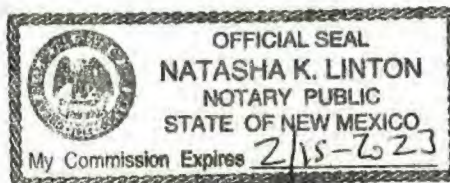
Applicant

By: 

Subscribed and sworn to before me, a Notary Public in the State of New Mexico, this 28 day or May, 2020

Natasha K Linton

Notary Public



## VERIFICATION STATEMENT

The attached application for a preliminary FERC permit is executed in the:

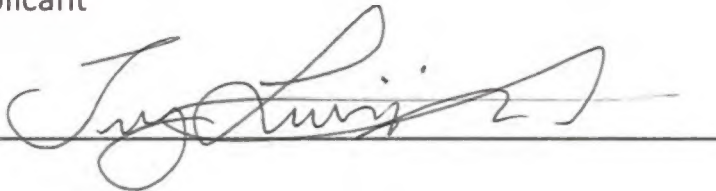
State of New Mexico

County of Santa Fe

By: Tracy Livingston  
Kinetic Power, LLC  
P.O. Box 32482  
Santa Fe, NM 87594

Being duly sworn depose(d) and say(s) that the content of this Preliminary Permit Application is true to the best of (his or her) knowledge or belief. The undersigned Applicant has signed the application this 26th day of May, 2020.

Applicant

By: 

Subscribed and sworn to before me, a Notary Public in the State of Utah, this 26th day of May, 2020



Notary Public



PRELIMINARY PERMIT APPLICATION  
FOR THE  
BECLABITO HYDROELECTRIC ENERGY STORAGE CENTER

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## INITIAL STATEMENT

*Pursuant to 18 CFR §4.81, each application for a preliminary permit must include the following initial statement and numbered exhibits containing the information and documents specified:*

(1) Kinetic Power, LLC, a Delaware Limited Liability Company ("Applicant") applies to the Federal Energy Regulatory Commission ("FERC") for a preliminary permit for the proposed Beclabito Hydroelectric Energy Storage Center ("Project"), as described in the attached exhibits. This application is made in order that the Applicant may secure and maintain priority of application for a license for this Project under Part I of the Federal Power Act while obtaining the data and performing the acts required to determine the feasibility of the Project and to support an application for a license.

(2) *The location of the proposed project is:*

State or territory: Arizona and New Mexico (crosses state boundary)  
County: Apache County, AZ and San Juan County, N.M.  
Township or nearby town: Shiprock, NM  
Stream or other body of water: San Juan River (reservoir fill and makeup water only)

(3) *The exact name, business address, and telephone number of the applicant are:*

Kinetic Power, LLC  
P.O. Box 32482  
Santa Fe, N.M. 87594  
Phone: (505) 225-1758

*The exact name and business address of each person authorized to act as agent for the applicant in this application are:*

Thomas J. Conroy  
P.O. Box 32482  
Santa Fe, N.M. 87594  
Phone: (505) 225-1758

J. Tracy Livingston  
P.O. Box 32482  
Santa Fe, N.M. 87594  
Phone: (505) 225-1758

(4) Kinetic Power, LLC is a limited liability company organized and existing under the law of the State of Delaware and is not claiming preference under section 7(a) of the Federal Power Act.

(5) *The proposed term of the requested permit is 48 months.*

(6) *If there is any existing dam or other project facility, the applicant must provide the name and address of the owner of the dam and facility. If the dam is federally owned or operated, provide the name of the agency.*

- There are no existing dams or other facilities that will be used for the proposed Project.

## INFORMATION REQUIRED BY 18 CFR §4.32(a)

- (1) *For a preliminary permit or license, identify every person, citizen, association of citizens, domestic corporation, municipality, or state that has or intends to obtain and will maintain any proprietary right necessary to construct, operate, or maintain the project;*

Kinetic Power, LLC  
P.O. Box 32482  
Santa Fe, N.M. 87594

- (2) *For a preliminary permit or a license, identify (providing name and mailing address):*

- (i) *Every county in which any part of the project, and any Federal facilities that would be used by the project, would be located:*

San Juan County, New Mexico  
County Manager  
Mike Stark  
100 S. Oliver Drive  
Aztec, N.M. 87410

Apache Co, Arizona  
County Manager/Clerk of the Board  
Ryan N. Patterson  
P.O. Box 428  
St. Johns, AZ 85936

Federal facilities to be potentially used by the project are as follows:

### BLM Acreage for Project Intertie Transmission Lines

The facility proposes to connect a new transmission line "A" to the Shiprock substation and an additional line "G" to the Four Corners Power Plant substation (see Exhibit 3-2). "New" transmission line A (or alternative A1) will extend from the project substation to the Shiprock substation, crossing 3.4 miles (x 200 ft) of BLM land comprising 82.4 acres (see Exhibit 3-3).

### BLM Acreage for Substation to Substation Path Upgrade

The Shiprock, Four Corners, and San Juan substations comprise a triangle of interrelated transmission capacity known as the Four Corners Hub. An upgrade increase in the existing transmission line capacity between two and possibly all three substations is proposed (as required) to create additional parallel paths to deliver the Projects energy to markets and to meet North American Electric Reliability Corporation (NERC) reliability requirements. If line capacity upgrading is required, the preferred option is reconductoring of existing lines which would not require additional BLM land. However, if reconductoring is not suitable or is insufficient to meet requirements, additional transmission line(s) are shown on new

right-of-way (ROW) paths B, C (C1 as alternate), or D adjacent and parallel to the existing lines (see Exhibit 3-2).

If reconductoring of existing lines is found to be unfeasible, up to three 150' wide ROW corridors that cross Federal BLM land are proposed as follows:

- Uprate Line B (west corridor): 1.25 miles of BLM ROW comprising up to 22.7 BLM acres, extending from the Four Corners Power Plant (FCPP) substation to the Shiprock substation.
- Uprate line C (east corridor): .94 miles of BLM ROW comprising up to 17.1 BLM acres, extending from the FCPP substation to the San Juan Generating Station (SJGS) substation, or alternate 1.9 miles of BLM ROW C1 comprising BLM land comprising up to 34.9 BLM acres.
- Uprate line D (north corridor): 1.9 miles of BLM ROW comprising up to 34.7 BLM acres, extending from the Shiprock substation to the SJGS substation.

The following scenarios summarize the options that would result in BLM acreage requirements:

- No existing substation interconnection line uprate ROWs required: 82.4 acres for "new" Line A.
- One to three substation interconnection line uprate ROWs required: 105.1 to 156.9 acres.
- One to three substation interconnection line uprate ROWs required using C1 alternate: 105.1 to 174.7 acres.

Additional acreage is located on tribal trust land of the Navajo Nation, to follow.

*(ii) Every city, town, or similar local political subdivision:*

*(A) In which any part of the project, and any Federal facilities that would be used by the project, would be located;*

The Project's hydroelectric facilities will not be located within the boundaries of any city, or town, and will be located in the following local political subdivisions of the Navajo Nation:

Beclabito Chapter Government of the Navajo Nation  
HC-61 Box 20  
Shiprock, New Mexico 87420-9064

Teec Nos Pos Chapter Government of the Navajo Nation  
Chapter Government Building  
Teec Nos Pos, AZ 86514

Red Valley Chapter Government of the Navajo Nation  
P.O. BOX 304  
Red Valley, AZ 86544



A portion of the Project's transmission line facilities will be located within the following local political subdivision of the Navajo Nation:

Shiprock Chapter Government of the Navajo Nation  
P.O. Box 3810  
Shiprock, NM 87420

*(B) That has a population of 5,000 or more people and is located within 15 miles of the project dam;*

None.

*(iii) Every irrigation district, drainage district, or similar special purpose political subdivision:*

*In which any part of the project, and any Federal facilities that would be used by the project, would be located:*

Navajo Nation Water Management Branch  
P.O. Box 678  
Fort Defiance, Arizona 86504  
Attn: Mr. Jason John, Director

Navajo Tribal Utility Authority  
P.O. Box 170  
Fort Defiance, AZ 86504

*(B) That owns, operates, maintains, or uses any project facilities or any Federal facilities that would be used by the project; None.*

*(iv) Every other political subdivision in the general area of the project that there is reason to believe would likely be interested in, or affected by, the application;*

**New Mexico:**

San Juan County, N.M. Water Commission  
7450 East Main Street, Suite B  
Farmington, N.M. 87402  
Phone: 505-564-8969

San Juan County, N.M. Flood Control Department  
San Juan County Office of Emergency Management  
209 S. Oliver Dr.  
Aztec, N.M. 87410

N.M. Interstate Stream Commission  
P.O. Box 25102  
Santa Fe, N.M. 87504-5102  
Attn: Mr. Rolf Schmidt-Petersen, Director

N.M. Environmental Department  
Water Protection Division  
P.O. Box 5469  
Santa Fe, N.M. 87502-5469  
Attn: Mr. Robert Italiano, District 2 Manager

**Arizona:**

Arizona Department of Water Resources  
1110 W Washington Street Suite 310  
Phoenix, AZ 85007  
Attn: Ms. Elizabeth V. Logan, Manager

Arizona Department of Agriculture  
1688 W. Adams Street  
Phoenix, AZ 85007  
Attn: Mr. Mark W. Killian, Director

Arizona Department of Environmental Quality  
1110 W. Washington Street  
Phoenix, AZ 85007  
Attn: Mr. Miseal Cabrera, Director

Arizona State Land Department  
1616 West Adams Street  
Phoenix, AZ 85007  
Attn: Commissioner Lisa A. Atkins

Arizona Game and Fish Department  
Habitat Partnership Committee  
5000 W Carefree Hwy  
Phoenix, Arizona 85086

Arizona State Historic Preservation Office  
1100 W Washington St  
Phoenix, AZ 85007

Apache County Flood Control Department  
Apache County Engineering Department  
P.O. Box 238  
St. Johns, AZ 85936

*(v) All Indian tribes that may be affected by the project:*

**Navajo Nation**

Office of the President  
100 Parkway, P.O. 7440  
Window Rock, AZ 86515

**Divisions of the Navajo Nation that may be affected:**

Shiprock Chapter Government of the Navajo Nation  
P.O. Box 3810  
Shiprock, N.M. 87420

Navajo Nation Environmental Protection Agency  
Office of Environmental Review  
P.O. Box 339  
Window Rock, AZ 86515

Navajo Nation San Juan River Farm Board  
P.O. Box 3810  
Shiprock N.M. 87420

Navajo Nation Department of Water Resources  
Administration  
P.O. Box 678  
Fort Defiance, AZ. 86504

Navajo Nation Division of Natural Resources  
P.O. Box 9000  
Window Rock, AZ 86515

**Departments within the Navajo Nation Division of Natural Resources:**

Navajo Forestry Department  
Fort Defiance, AZ 86504

Navajo Nation Technical, Construction, and Operations Branch  
TCOB DWR  
Ayani Nez Blvd.  
Shiprock, N.M. 87420

Navajo Nation Department of Agriculture  
P.O. Box 4889  
Window Rock, AZ 86515

Navajo Land Department  
2B Taylor Rd., Bldg. #8966,  
St. Michaels, AZ 86511

Navajo Nation Historic Preservation Department  
P.O. Box 4950  
Window Rock, AZ 86515

Navajo Nation Division of Fish and Wildlife  
P.O. Box 1480  
Window Rock, AZ 86515

## EXHIBIT 1 – DESCRIPTION OF THE PROPOSED PROJECT

*18 CFR §481(b) Exhibit 1 must contain a description of the proposed project, specifying and including, to the extent possible:*

- (1) The number, physical composition, dimensions, general configuration and, where applicable, age and condition, of any dams, spillways, penstocks, powerhouses, tailraces, or other structures, whether existing or proposed, that would be part of the project;*

### **Operation**

The Project will be operated primarily as a bulk, very long duration energy storage facility. The stored energy will be redelivered on a base load, hourly scheduling, or intra-hour load following basis to provide dispatchability to energy generated by variable resources primarily consisting of photovoltaic solar energy and wind energy. The Project will enable increased integration of these rapidly increasing variable renewable resources. Secondary benefits include the provision of spinning and standby reserve capability for contribution to peak load capacity requirements. Due to the emerging regional requirements for zero carbon generation portfolios, very long duration storage has been determined essential to meet the requirements. Therefore, the reservoirs are sized to provide power for more than 60 continuous hours at maximum generation capacity. During the study period, analysis will be focused on determining the combination of storage duration and energy capacity that meets utility requirements. As one example, by adjusting the Project capacity size from 1500 MW to 1000 MW the storage capacity can be increased to 89 hours.

### **The Project**

The Project does not intercept a perennial surface water course and will be “closed loop”, meaning that water in the reservoirs will continuously re-circulate. Water required to initially fill the reservoirs and required make-up water will be pumped from locally available surface water resources. Two new dams with associated reservoirs will be constructed in dry gulches. No perennial waterways will be affected. The Project will be comprised of upper and lower reinforced-concrete inlet/outlet structures, concrete and/or steel-lined water conveyance tunnels, an underground powerhouse containing power generation turbine generators and pumps and associated ancillary equipment, a water pumping station located at the San Juan River and an associated water pipeline to the lower reservoir, substations, transmission facilities, and supporting infrastructure. Hydrology studies will be completed. Initial study indicates seepage from the tunnels and reservoirs will remain within the San Juan river basin.

### **Dams and Reservoirs**

The dams are proposed to be rockfill or earthen type. The final material design will be informed by geotechnical and engineering evaluation. Seepage control will be provided by drainage means through the dam base. Foundation grouting may be required to control seepage and would include a grout curtain as required. A dam drainage system will be provided and will be connected to a seepage collection system along the downstream dam toe. Due to the relatively small ratio of the 1,125-acre upper drainage basin divided by the 392-acre upper reservoir surface area, the upper dam freeboard can be designed to accommodate lake elevation increase due to maximal expected precipitation. This natural geography thus minimizes or eliminates the spillway. The lower reservoir will be provided a

spillway, proposed to be located on the upstream southwest shoreline 5,300 feet away from the dam, for draining into the adjacent dry gulch. Subsequent engineering studies will inform the final design and location of the spillway.

### **Inlet/Outlet Structures**

Inlet-outlet structures at the upper reservoir will be morning-glory or bell-mouth type vertical intakes near the deepest location of the reservoir. The lower reservoir inlet-outlet structure is anticipated to include tailrace tunnel gate slots for unit isolation. The inlet structure designs may be modified pending detailed engineering studies.

### **Powerhouse**

The 300-foot by 75-foot by 160-foot high reinforced-concrete powerhouse will accommodate the pump-turbine/motor-generating systems. The initial design includes 6 x 250 MW fixed speed turbines. Initial design flexibility includes the option to replace one or two turbines with variable speed machines in sizes up to 150 MW each, or in multiple configurations of smaller machines. Battery energy storage systems (BESS) may be incorporated for transient operation and/or to provide ancillary services as required by off takers. Final configurations will be determined during the study period in coordination with off taker customers.

### **Surge Control Facilities**

The initial design surge control system envisions a 10 ft to 14 ft diameter shaft starting near the entrance to the powerhouse, rising 3,375 ft vertically while parallel to the penstock shaft, and exiting at the surface approximately midway (laterally) between the reservoirs at an elevation equivalent to the maximal upper reservoir surface (see Exhibit 3-4 "Overflow Structure"). The shaft pipe will transition near the ground level to a larger volume, overflow water containment structure that will extend up to approximately 40 ft above grade for collection of the surge water. The containment structure is estimated to be up to 8x larger cross-sectional area than the shaft pipe area. Hydraulic surge studies including transient events will guide the final design of surge control facilities.

### **Water Conveyance**

Water will flow bidirectionally between the upper and lower reservoirs through up to four upper reservoir inlet/outlets, two penstock vertical shafts, four horizontal headrace tunnels, six individual unit draft tube tunnels, four low pressure tailrace tunnels, and up to four lower reservoir inlet/outlets. The estimated 16 ft diameter headrace tunnels connect to the 23 ft diameter penstock shafts, then to manifolds into six, steel-lined penstocks which then connect to the powerhouse turbines. From the powerhouse, water will discharge into up to six draft tubes from each unit and then into and up to four, 16 ft diameter tailrace tunnels which will discharge into the lower reservoir. The number of tunnels, diameters, and lengths are preliminary and will be finalized after being informed from geotechnical evaluations and from off taker bulk energy vs ancillary services requirements.

The dimensions of the above-described facilities are as follows:

	<b>Feet</b>
Length of each penstock	300
Length of each headrace tunnel	15,880
Length of each vertical shaft	2,841
Length of each draft tube	250
Length of each tailrace tunnel	24,788
Length of water source pipeline	59,664

- (2) *The estimated number, surface area, storage capacity, and normal maximum surface elevation (mean sea level) of any reservoirs, whether existing or proposed, that would be part of the project:*

The Project will utilize both an upper and a lower reservoir, both of which will be newly constructed.

<b>Parameter</b>	<b>Upper Reservoir</b>	<b>Lower Reservoir</b>
Max. Surface Elevation (ft msl)	8,970	5,656
Usable Capacity (acre-feet)	35,043	36,209
Maximum Drawdown (ft)	200	62
Surface Area (acres)	392	534
Dam Height (ft)	542	166
Dam Length at Crest (ft)	1333	1134
Dam Type	Earthen/Rock Fill	

- (3) *The estimated number, length, voltage, interconnections, and, where applicable, age and condition, of any primary transmission lines whether existing or proposed, that would be part of the project [see 16 U.S.C. 796(11)];*

The precise substation, transmission, and interconnection locations, features and characteristics are dependent upon the results of studies and off-taker conversations to be carried out during the term of the permit. However, in general the project plans to connect to a primary transmission terminal at FCPP using Line G with line G1 as the alternate. Additionally, due to NERC and Western Electricity Coordinating Council (WECC) requirements for reliability, an additional line A or A1 as the alternate is proposed to connect to Shiprock substation. Each ROW corridor will be up to 200 feet wide. The choice of the primary path, its alternate, or a variation will be determined during scoping reviews. According to WECC criteria, the two lines A and G are not permitted to share a common corridor due to N-1 reliability criteria and thus must be separated by the lesser of 1,500 ft or the equivalent span between towers. The transmission lines are anticipated to have 800 to 1,000 ft tower spacing. With the exception of lines converging upon approach to substations, Exhibit 3-2 illustrates the lines separated by a minimum of 800 ft.

Utilizing the alphabetic references from the chart below, B, C, and D represent additional potential transmission line routings that would utilize up to 150 feet wide ROW corridors. These lines are proposed adjacent to existing transmission lines (see Exhibit 3-2, and 3-3) between Shiprock

substation, FCPP substation, and SJGS substation. One to three of the B, C (C1), and D corridors may be required if the available capacity of the existing transmission lines adjacent to the proposed new corridors B, C and D are insufficient to deliver the Project's capacity to the regional transmission grid from Project Tie 1 and 3. Consideration for reconductoring lines on the existing transmission towers adjacent to B, C, or D ROWs will be prioritized over adjacent new ROWs. Such uprate capacity increases and/or the need for additional adjacent transmission line corridors are to be determined during the study period.

Project Trans. Line	Voltage	Max ROW Width (ft)	ROW Type			Total ROW Length (miles)	Tie-Tie Route (see maps)	Corridor Description
			Adjacent to Existing ROW (miles)	Above Existing ROW (miles)	Isolated ROW (miles)			
A	500kv	200	8.9	2	22.7	33.6	4-3	Project Sub to Shiprock Sub
G	500kv	200	0	0	34.7	34.7	4-1	Project Sub to 4CPP Sub
Totals:						68.3		

Alternative Routes for A and G								
A1	500kv	200	17.4	0	19.19	36.6	4-3	Alternative Route for A
G1	500kv	200	0	0	33.8	33.8	4-1	Alternative Route for G
Totals:						70.4		

4CPP-SJGS-SR Transmission Path Uprates*								
B	500kv	150	8.16	0	0	8.16	1-3	4CPP Sub to Shiprock Sub
C	500kv	150	10.4	0	0	10.4	1-2	4CPP to SJGS Sub
D	500kv	150	1.91	0	0	1.91	2-3	Shiprock Sub to SJGS Sub
B, C, D Totals:						20.5		
Using C1 as alternative Route for Path C								
C1	500kv	150	9.4	0	0	9.4	4-5	Project Sub to Tie 4
B,C1, D Totals:						19.5		
*Proposed new transmission lines for path capacity rating increase between interconnect substations.								

Tie-In Descriptions (see Exhibit 3-2, 3-3)	
1	4 Corners Power Plant Substation (4CPP)
2	San Juan Generation Station Substation (SJGS)
3	Shiprock Substation (SR)
4	Project Substation (PS)

- (4) The total estimated average annual energy production and installed capacity (provide only one energy and capacity value), the hydraulic head for estimating capacity and energy output, and the estimated number, rated capacity, and, where applicable, the age and condition, of any turbines and generators, whether existing or proposed, that would be part of the project works;

	Units	Metric
Installed Capacity	MW	1,500
Number of Units	Ea	6
Unit Rated Capacity	MW	250
Maximum Generating Discharge	CFS	6,117
Maximum Static Head	Feet	3,376
Minimum Static Head	Feet	3,114
Average Annual Generation	GWh	2,628

- (5) *All lands of the United States that are enclosed within the proposed project boundary described under paragraph (d)(3)(i) of this section, identified and tabulated on a separate sheet by legal subdivisions of a public land survey of the affected area, if available. If the project boundary includes lands of the United States, such lands must be identified on a completed land description form (FERC Form 587), provided by the Commission. The project location must identify any Federal reservation, Federal tracts, and townships of the public land surveys (or official protractations thereof if unsurveyed). A copy of the form must also be sent to the Bureau of Land Management state office where the project is located;*

**Bureau of Land Management (BLM)/U.S. Department of the Interior Offices:**

Arizona State BLM Office  
One North Central Ave.  
Suite 800 (8th Floor)  
Phoenix, AZ 85004-4427  
602-417-9200  
blm\_az\_asoweb@blm.gov

New Mexico State BLM Office  
301 Dinosaur Trail  
Santa Fe, NM 87508  
505-954-2000  
blm\_nm\_comments@blm.gov

Farmington District BLM Office  
6251 College Blvd., Suite A  
Farmington, NM 87402  
505-564-7600  
blm\_nm\_comments@blm.gov

**Indian Affairs / U.S. Department of the Interior Offices:**

Southwest Regional Office  
1001 Indian School Road, NW  
Albuquerque, NM 87104  
Telephone: (505) 563-3103

The Project facilities, proposed transmission line, water fill pipeline right of ways, and the federal lands required for each is described by township, range, and section in the tables to follow and in



Exhibits 3-2, 3-3, 3-4, 3-5. The proposed hydroelectric facility boundary comprises 10,695 acres and is located entirely on Navajo Nation lands extending across the Arizona-New Mexico state border. Additional N.M. land proposed for study outside the hydroelectric facilities boundary description comprise a) up to 1,624 acres of Navajo Nation lands and 82.4 acres of BLM lands for Project intertie transmission ROW A (or A1) and G (or G1), 2) 23 acres of Navajo Nation land acreage for 50' wide ROW's for new approach roads to tunnel portals 1 and 2, 3) 55.3 acres of Navajo Nation land for a 40' wide ROW for the 11.4 mile water fill pipeline, and 4) up to 80 acres for the river intake pumping facilities and settling ponds. In addition, because uprate ROWs B, C (or alternate C1), or D or a combination of all three may be required, additional N.M. acreage is requested for ROW study purposes as follows: a) 92.4 acres of BLM land, 203 acres of Navajo Nation land, 14 acres of state land, and 105 acres of private land.

Aggregate sites for dam construction external to the Project boundary are not included as acreage. Upon aggregate sites becoming definitive, the acreage will be included in revisions to the study document. Less than 200 acres for aggregate sites is anticipated. Roads needing improvements located external to the Project boundary are not included in Project acreage.

For study purposes, the hydroelectric facility boundary, the transmission intertie ROW's, and alternative routes, the four uprate transmission ROW's, the water fill pipeline ROW and pumping facilities, and road access ROW's comprise a 12,974-acre Project boundary. The acreage is contained within PLSS sections described in the tables to follow and in Exhibit 3-2 and 3-3. Due to the request for alternative ROW's for initial study, the Project acreage for final license application is expected to be substantially reduced.

See table below for ROW transmission line land requirements as described in Exhibit 3-2.

Project Trans. Line	Max ROW Width (ft)	ROW Owners (miles)				ROW Owners (acres)				Tie-Tie Route (see maps)	Corridor Description
		ROW on Tribal Lands (miles)	ROW on State Lands (miles)	ROW on Private Lands (miles)	ROW on NM BLM (miles)	ROW on Tribal Lands (acres)	ROW on State Lands (acres)	ROW on Private Lands (acres)	ROW on NM BLM (acres)		
A	200	30.2	0	0	<b>3.4</b>	732	0	0	<b>82.4</b>	4-3	Project Sub to Shiprock Sub
G	200	34.7	0	0	<b>0</b>	841	0	0	<b>0</b>	4-1	Project Sub to 4CPP Sub
A, G Totals:		64.9	0	0	<b>3.4</b>	1573	0	0	<b>82.4</b>		

Alternative Routes for A and G											
A1	200	33.2	0	0	<b>3.4</b>	805	0	0	<b>82.4</b>	4-3	Alternative Route for A
G1	200	33.8	0	0	<b>0</b>	819	0	0	<b>0</b>	4-1	Alternative Route for G
A1, G1 Totals:		67.0	0	0	<b>3.4</b>	1624	0	0	<b>82.4</b>		

4CPP-SJGS-SR Transmission Path Uprates*											
B	150	5.07	0.5	1.34	<b>1.25</b>	92	9.1	24.4	<b>22.7</b>	1-3	4CPP Sub to Shiprock Sub
C	150	6.08	0.28	3.1	<b>0.94</b>	111	5.1	56.4	<b>17.1</b>	1-2	4CPP to SJGS Sub
D	150	0	0	0	<b>1.9</b>	0	0.0	0.0	<b>34.7</b>	2-3	Shiprock Sub to SJGS Sub
B, C, D Totals:		11.2	0.8	4.4	<b>4.1</b>	203	14	81	<b>74.5</b>		
Using C1 as alternative Route for Path C											
C1	150	3.02	0	4.46	<b>1.92</b>	55	0	81	<b>34.9</b>	4-5	Project Sub to Tie 4
B,C1, D Totals:		8.1	0.5	5.8	<b>5.08</b>	147	9	105	<b>92.4</b>		

\*Proposed new transmission lines for path capacity rating increase between interconnect substations.

The final Project and transmission ROW acreage may vary depending on the results of the study. The following charts describe the federal lands required by section per Project attribute and are further described per FERC Form 587 to follow: Other than described above, there are no other lands of the United States enclosed within the proposed project boundary or potential transmission line corridor routes.

	Sections				
	BIA AZ		BIA NM		
	39N30E	39N31E	30N21W	30N20W	31N20W
Hydro-electric Facility Boundary	1	6	25	31	
	2	7	26		
	3	17	27		
	4	18	34		
	5	19	35		
	6	20	36		
	7				
	8				
	9				
	10				
	11				
	12				
	13				
	14				
	17				
	18				
	24				
Makeup Water Pipeline 40' ROW			25	4	3
			36	8	10
				9	15
				17	22
				20	27
				29	28
Alternate Makeup Pipeline 40' Row				30	33
					16
					21
					29
					32

Uprate Lines	Sections			
	BLM NM		BIA NM	
	30N16W	30N15W	29N16W	29N15W
Path B 150' ROW	24		1	
	25		2	
			11	
			12	
			14	
			23	
			26	
			35	
Path C 150' ROW		20	12	7
		29	13	
			14	
			23	
			26	
			35	
Alternate Path C1 150' ROW		19	35	8
		20	36	17
		30		18
		31		20
				29
Path D 150' ROW				30
				31
	24	19		
		20		

Intertie Lines	Sections													
	BIA AZ	BIA NM												BLM NM
	39N31E	30N21W	30N20W	30N19W	30N18W	30N17W	30N16W	29N19W	29N18W	29N17W	29N16W	31N19W	31N18W	30N16W
Intertie Trans. Line A 200' ROW	7	22	19	25	22	13	18							21
	8	23	20	26	23	14	19							22
		24	21	27	24	15	20							23
			22	28	26	16	21							24
			25	29	27	19								
			26	30	28	20								
			27		29	21								
Intertie Trans. Line G 200' ROW			28		30	24								
	7	22	25	25					3	17	26			
	8	23	26	26					4	18	27			
		24	27	27					10	19	28			
		25	28	28					11	20	29			
			29	29					13	21	30			
			30	30	28				14	22	35			
Alternate Intertie Trans. Line A1 200' ROW					29					23				
					30					25				
					33					26				
	7	22	1	5	1	5	18					23	19	21
	8	23	11	6		6	19					24	20	22
		24	12			8	20					26	21	23
			14			9	21					27	22	24
Alternate Intertie Trans. Line G1 200' ROW			15			13						32	26	
			16			14						33	27	
			19			15						34	35	
			20			16							36	
			21			24								
		22	27	31				4	17	19	26			
		23	28					5	18	20	27			
Alternate Intertie Trans. Line G1 200' ROW		24	29					6	20	21	28			
		25	30					9	21	22	29			
			34					10	22	23	30			
			35					11	23	25	35			
			36					13	24	26				
								14		27				

(6) Any other information demonstrating in what manner the proposed project would develop, conserve, and utilize in the public interest the water resources of the region.

The Project has been specifically designed to minimize water usage and will be one of the most water efficient PSH projects in the world when completed. The water efficiency of a PSH project is determined by the head elevation (defined as the vertical elevation difference between upper and lower reservoirs). The water required by a project varies linearly with the head difference: For example, a PSH project with a head of 1,000 feet will require half the water as the same (nameplate generation and storage capacity) project having a 500 foot head elevation. Reducing water requirements for the Project energy production also reduces evaporation and fill water requirements. The Project has been designed at the maximum limit of head difference that is currently specified using today's hydro pump/turbine/generator equipment.

Up to 38,300 acre feet of “one time use” water is required for a) initial lower reservoir fill, b) initial fill of the unusable portion of the upper reservoir, and c) for evaporative loss during the 1.5 to 2 year timeline to initially charge the reservoirs. The water is to be pumped via a new pipeline drawing from the nearby San Juan River under a planned two-year purchase of temporary water rights.

After the initial fill, the expected annual evaporative water loss from the reservoirs is estimated to be 2,635 acre-feet. In contrast, the San Juan Generating Station, prior to shutdown of two of its coal units, exhibited a water loss of 22,400 ac-ft per year, according to a 2006 government report. Thus, on an absolute comparison basis, the Project consumes 88% less water than the coal plant operating at prior full capacity. On a per unit of delivered energy basis (MWh/yr), the Project is estimated to consume 69% less water than SJGS.

	MW	NCF	MWh/yr	Ac-ft /yr	Gallons /Mwh	% Water Reduction per MWh
San Juan Generating Station	1684	69%	10,237,777	22,400	713	
Proposed Beclabito Project	1500	20%	2,628,000	2,655	329	<b>69%</b>
Program on Technology Innovation: Water Resources for Thermoelectric Power Generation Section 4-1. <a href="https://netl.doe.gov/sites/default/files/crosscutting/41906-Final.pdf">https://netl.doe.gov/sites/default/files/crosscutting/41906-Final.pdf</a>						

The Project’s evaporative loss estimate is based on monthly reservoir average surface area and Shiprock evaporative pan data adjusted for temperature and elevation and a .7 adjustment from pan to reservoir rates as recommended by the Bureau of Reclamation. Additional seepage losses from the tunnel and reservoirs will be estimated pending further geological assessments during the study period. The Project plans to purchase water rights to cover annual water losses. If upon further analysis during the study period, the seepage losses do not indicate a return to the San Juan River basin, additional water rights will be obtained. If seepage losses are determined to be greater than initial estimates, a commensurate increase in river pump size will be designed. Evaporation control and seepage control measures would be employed to minimize water loss and to minimize impacts on aquatic life.

The initial fill and make up water pump facility will be sited adjacent to the San Juan River in a location and via a design, in coordination with appropriate wildlife agencies, that minimizes river intake impacts, particularly to the Colorado pike minnow and razorback sucker, and potentially to other aquatic species. Requirements for positive barrier screens or equivalents are anticipated. An initial proposed site has been selected based on 1) the shortest distance from the water intake to the pump house to include an elevation rise sufficient for the pump facility to be located above the high flood criteria to avoid canal dredging, 2) maximal use of existing unpaved roads for minimal new water pipeline ROW impacts, 3) sufficient river water depth to minimize or eliminate significant recontouring the river bottom, 4) adjacent flat terrain suitable for construction of river silt settling ponds such settling ponds proposed less than 40 acres in total (see exhibit 3-5).

To achieve a reasonable time frame for the initial reservoir charge, the pumps are sized to be many times larger than required for evaporative make up water pumping requirements. As an example, if the pumps are sized for a 1.5-year initial fill timeframe, the installed pumping rate would be 13 times the rate required for subsequent annual evaporative losses makeup water. Under this scenario the continuous makeup water pumping rate is 7.7% of pump capacity and provides

optionality to adjust make up water pumping to daily times and/or seasons, thereby enabling potential reduced impacts on river flow and/or aquatic species. The magnitude of the possible pumping rate adjustments will be investigated with stake holders during the study period. In addition, the intake facility, the additional pumping capacity, taps along the pipeline, and access to the lower reservoir's excess capacity is proposed to be made publicly available for use in beneficial, community-based water delivery projects. The determination of the availability of capacity for community projects vs flow adjustment for species protection and river flow impacts will be determined during the study period.

An initial study on San Juan river flow reductions due to pumping was completed. The river impacts for an initial 1.5-year reservoir fill pumping rate and for annual evaporative make up water pumping were estimated. Historical flow rates at Shiprock, N.M. for the lowest river flow year and for an annual average flow year were compared to the flow rate reductions due to pumping. During the initial fill, and assuming continuous 24 x 7 pumping, the largest reduction in river flow is 7.4% in April for the lowest comparative river flow year (2015), and a 2.7% reduction over a 15-year April average. The makeup water flow impact is .8% and .3% respectively for April.

	Cubic Feet per Second (CFS)												
	Avg cfs	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
SJR Flow - Shiprock yr 2015	1219	641	707	954	608	1375	4225	1626	1448	773	843	762	662
SJR Flow - Shiprock avg 1990-2015	1529	831	942	1320	1630	3530	3850	1290	1090	1120	988	911	843
	% River Flow Reduction												
Makeup Water % of river flow (2015 eq.)	0.4%	0.8%	0.7%	0.5%	<b>0.8%</b>	0.4%	0.1%	0.3%	0.3%	0.6%	0.6%	0.6%	0.7%
Makeup Water % of river flow (avg 1990-2015)	0.3%	0.6%	0.5%	0.4%	<b>0.3%</b>	0.1%	0.1%	0.4%	0.5%	0.4%	0.5%	0.5%	0.6%
Initial Reservoir fill as % of river flow (2015 eq.)	3.7%	7.0%	6.3%	4.7%	<b>7.4%</b>	3.3%	1.1%	2.8%	3.1%	5.8%	5.3%	5.9%	6.8%
Initial Reservoir fill as % of river flow (avg 1990-2015)	2.9%	5.4%	4.7%	3.4%	<b>2.7%</b>	1.3%	1.2%	3.5%	4.1%	4.0%	4.5%	4.9%	5.3%
Based on 1.5 year initial fill rate of 44.7 CFS and an evaporative makeup rate of 4.9 CFS (assuming a tunnel and lake seepage rate of .54 CFS).													

During the study period, impact assessments will be completed for species and downstream user effects resulting from acquiring idle water rights with commensurate reductions to river flows as described in the above table. The results will be compared to acquiring active water rights, to achieve up to 100% offset reductions in water use by upstream water right providers to null the river flow impacts due to pumping. Additional studies will include the tradeoffs in construction time and increased pumping facility and pipeline capacity costs compared to flow mitigation by shifting to higher pumping rates in high flow months and less in low flow months.

An initial pipeline route has been proposed to stakeholders that maximizes the use of existing unpaved road ROW's to reduce new ROW corridor impacts as follows (see exhibit 3-5 for corridor details):

	Location	Type	Miles	Acres
Section 1	Lower Lake-Hwy 64	New ROW	4.6	22.3
Section 2	Under BIA 5113	Existing	3.4	16.5
Section 3	New Route	New ROW	3.4	16.5
	Total		11.4	55.3

Pump and pipe specifications for delivering water from the San Juan River to the Project's lower reservoir will be characterized during the study phase. Initial engineering estimates indicate the pipeline will be up to 32 inches diameter.

## EXHIBIT 2 – DESCRIPTION OF PROPOSED STUDIES

*18 CFR §481(c) Exhibit 2 is a description of studies conducted or to be conducted with respect to the proposed project, including field studies. Exhibit 2 must supply the following information:*

*(1) General requirement. For any proposed project, a study plan containing a description of:*

- (I) Any studies, investigations, tests, or surveys that are proposed to be carried out, and any that have already taken place, for the purposes of determining the technical, economic, and financial feasibility of the proposed project, taking into consideration its environmental impacts, and of preparing an application for a license for the project;*

Applicant proposes to conduct the following detailed studies to determine project technical and operational feasibility, design optimizations, and economic optimization. The resultant Project study will integrate the pre-filing licensing process and generate information required to develop a licensing application, including:

- Geological investigations: Maps and subsurface investigation programs will be completed to obtain feasibility level designs of significant project attributes.
- Topographical surveying
- Environmental studies:
  - Identify aquatic habitats, (wetlands, seeps and springs, and other water sources, both artificial and natural), that might be affected by the Project. For each wetland, seep, or spring, the Applicant will estimate the condition and size, current use by flora and fauna, identify potential Project impacts, and if appropriate options for mitigation of impacts.
  - Conduct habitat analysis.
    - Identify any issues (including during operation and construction) with species of concern, indicator species, and threatened or endangered species.
    - Conduct surveys for presence of habitat.
- Social, and cultural study scoping and consultation, surveys, impact identification and assessment, and formulation of appropriate mitigation measures.
  - A cultural resource inventory of the Project area and transmission routes will be completed to understand historic and prehistoric cultural resources, particularly within un-surveyed sections of the proposed Project and transmission route.
  - The Project will coordinate with the State Historic Preservation Office and Tribal Historic Preservation Officers in accordance with requirements of Section 106 of the National Historic Preservation Act. As details of the Project, and particularly the final transmission alignment and site design become available, the Applicant will define an Area of Potential Effects in consultation with local Tribes and Tribal Historic Preservation Officers (THPOs), and if required with the State Historic Preservation Office (SHPO).
- Land use studies, with intensive consultation with the Navajo Nation and land leaseholders.

- Engineering studies to optimize the Projects' technical capabilities and final design specifications. The outcomes may result in changes to number of turbines, sizes, amount of energy storage, operations, and other unforeseen changes.
- Determination of size, capability, and specific types of equipment.
- Working with local utility customers to refine utilization models for reservoir charging/discharging, power generation requirements, and resultant pumping requirements.
- Transmission interconnection planning.
- Water rights and related issues resolution.
- Development of river flow and aquatic species mitigation plans for river water intake facilities.
- Legal and contractual issues and resolution.
- Refinements to cost estimates, economic feasibility, and financial planning assumptions.
- Assessment of Socio-economic Benefits i.e.. direct and induced local economic benefits from a "hiring local" initiative.

Since the Project is located entirely on Navajo Nation lands (with the exception of some transmission corridors) the Applicant has begun and will continue to coordinate closely with the Navajo Nation government on all facets of the project. Environmental studies may include water quality, aquatic resources, wildlife and botanic resource impacts, and rare, threatened, and endangered species. Cultural and social studies may include land use, recreation, aesthetics, socio-economic, historical, archaeological, and tribal resources.

Based on the initial findings of the feasibility study, the Applicant will prepare and file with the Commission a Notice of Intent and Pre-Application Document as detailed in 18 CFR §5.5 and §5.6.

*(II) The approximate locations and nature of any new roads that would be built for the purpose of conducting the studies;*

The Applicant will use existing roads to conduct the studies to the extent possible and with the exception of geological studies, does not envision additional roads being needed to conduct the feasibility studies listed above. Any new roads will be sited in the same location as anticipated project construction roads as shown on exhibit 3-4. Anticipated new roads for geological studies requiring rotary core drill rig access include: a) a 2.9 mile road terminating above the powerhouse at the proposed water outlet structure, and b) a 2.1 mile road terminating at the proposed location for "Access Portal 1". The roads are proposed as 18 ft wide dirt roads with moderate slope contouring and, in limited locations, a gravel base. Two additional dirt roads of 12 ft wide with minimal contouring may be required for shallow Geotech evaluations along the lake beds and dam locations. Access will be by pickup truck and trailer-able rigs. While efforts have been made to identify all potential new roads necessary for the study phase, additional roads may be required. Use of roads and access will be coordinated in advance with landowners. Any new roads will be properly permitted and approved by the landowners.

*(2) Work plan for new dam construction. For any development within the project that would entail new dam construction, a work plan and schedule containing:*

*(i) A description, including the approximate location, of any field study, test, or other activity that may alter or disturb lands or waters in the vicinity of the proposed project, including floodplains and wetlands; measures that would be taken to minimize any such disturbance; and measures that would be taken to restore the altered or disturbed areas;*

The selection of the best Project configuration will depend on multiple factors, including the storage capacity and physical size of the dams and reservoirs, the horizontal and vertical separation between the reservoirs, geological, social, and cultural constraints that may be discovered, and topographic conditions. Field studies will be required covering geological investigations, topographic surveys, and environmental surveys and mapping.

Geological investigations may involve exploratory borings, test pits, test trenches, and seismic surveys. An underground powerhouse is a viable option that will be investigated.

Topographic surveying may involve traversing the Project area on foot or in a light vehicle. Topographic surveying is not expected to disturb or alter any lands or waters in the Project area.

Environmental surveys may involve traversing the Project on foot or in a light vehicle to collect samples, perform inventories, and perform observations necessary to conduct the environmental evaluations. Environmental surveying is not expected to disturb or alter any lands or waters in the Project area. There will be no investigations with impacts in wetlands or navigable streams.

Exploratory borings of various depths will be required within the upper and lower reservoir areas, dam locations, and above the proposed tunnel locations. The total number, depth, and diameter of borings to be made is not currently known. The exact locations of exploratory borings will be determined based on reducing tunnel excavation uncertainty after further study. Environmental drilling will be designed to minimize any adverse environmental impacts. Best management practices (BMP) will be used to mitigate waste impacts, minimize noise, dust, and odors, and to restore altered and disturbed areas. BMP's will also be applied for any test pits, trenches, or seismic profiling to be completed following further Project study. The Applicant will comply with applicable state and local guidelines and regulations and coordinate site activities with the Navajo Nation.

*(II) A proposed schedule (a chart or graph may be used), the total duration of which does not exceed the proposed term of the permit, showing the intervals at which the studies, investigations, tests, and surveys, identified under this paragraph are proposed to be completed.*

*(III) For purposes of this paragraph, new dam construction means any dam construction the studies for which would require test pits, borings, or other foundation exploration in the field.*

The preliminary schedule below shows the approximate timelines under which studies, investigations, tests, and surveys are contemplated to be completed. The schedule shown is subject to change as determined by field conditions and interactions with other Project stakeholders.



Pathway To License		Cumulative Months	Cumulative Months
Activity	Responsible Party	# Months at Task Start	# Months at Task End
File Preliminary Permit Application	Kinetic Power	0.0	0.0
Acceptance of Preliminary Permit Application	FERC	0.5	0.5
Comments on Preliminary Permit Application	Stakeholders*	0.5	2.5
Response to Comments on Preliminary Permit Application	Kinetic Power	2.5	2.8
Order Issuing Preliminary Permit	FERC	3.0	3.0
File Notice of Intent (NOI) and Pre-Application Document (including proposed study plans) with FERC. IF TLP requested notify now	Kinetic Power	6.2	12.3
Comments on optional Request to Use the TLP filed with FERC	Stakeholders*	12.8	13.3
Typographical & Geological Surveying Complete	Kinetic Power	3.2	15.5
Comments on First Year Proposed Study Plans to Kinetic Power	Stakeholders	12.8	13.3
Hold Initial Tribal Consultation Meeting	FERC	12.8	13.3
FERC Approval of TLP (if applied)	FERC	14.3	14.3
Joint Meeting and Site Visit with Resource Agencies, Native Americans, and Members of the Public	Kinetic Power / Stakeholders / FERC	15.3	15.3
Stakeholder Study Requests	Stakeholders	15.3	17.4
Issuance of Scoping Document 1	FERC	17.5	18.4
1st Year Studies	Kinetic Power	9.3	18.5
Presentation of 1st Year Study Results and Preview of 2nd Year Study Plans	Kinetic Power	18.5	19.5
Scoping Meetings	FERC	19.8	19.8
Completion of Engineering studies to optimize Project Configuration	Kinetic Power	6.3	18.6
Comments on 1st Year Studies and 2nd Year Study Plans	Stakeholders	19.9	20.5
File 1st Year Study Report and 2nd Year Study Plan with FERC	Kinetic Power	20.6	21.6
Issuance of Scoping Document 2nd Year Studies	FERC	21.6	21.6
2nd Year Studies	Kinetic Power	21.6	29.8
Presentation of 2nd Year Study Results	Kinetic Power	29.8	30.8
Comments on 2nd Year Studies	Stakeholders	30.8	31.8
File 2nd Year Study Report with FERC	Kinetic Power	31.9	32.8
File Draft License Application with FERC	Kinetic Power	35.0	35.9
Completion of Transmission Interconnect Studies & Signing Agreement	Kinetic Power	4.7	33.9
Comments on Draft License Application	Stakeholders	35.9	38.9
File Final License Application with FERC	Kinetic Power	39.0	41.0

- (3) *Waiver. The Commission may waive the requirements of paragraph (c)(2) pursuant to §385.207 of this chapter, upon a showing by the applicant that the field studies, tests, and other activities to be conducted under the permit would not adversely affect cultural resources or endangered species and would cause only minor alterations or disturbances of lands and waters, and that any land altered or disturbed would be adequately restored.*

The Applicant does not plan to apply for a waiver for the requirements of 18 CFR §4.81 (c)(2) pursuant to 18 CFR §385.287.

- (4) *Exhibit 2 must contain a statement of costs and financing, specifying and including, to the extent possible:*

*(i) The estimated costs of carrying out or preparing the studies, investigations, tests, surveys, maps, plans or specifications identified under paragraph (c) of this section;*

The Applicant anticipates the geological, topographical, environmental, and cultural studies to cost \$6 to \$10 million including the FERC Pre-Application Document (PAD), Notice of Inquiry (NOI), preparation of the draft and final license applications, and conducting field and office engineering and environmental studies. The Applicant is currently working with the Department of Energy (DOE) under the DOE Furthering Advancements to Shorten Time (FAST) program to demonstrate innovative tunneling methods and technologies that reduce time, cost, and risks of PSH projects. Project impacts to demonstrate and commercialize those improved technologies remain subject to study. FAST program information and the announcement of Applicants first place finish in the contest is here:

<https://www.nrel.gov/news/program/2019/fast-grand-prize-winners-make-progress-on-pumped-storage-research.html>

*(ii) The expected sources and extent of financing available to the applicant to carry out or prepare the studies, investigations, tests, surveys, maps, plans, or specifications identified under paragraph (c) of this section; and*

The Applicants have extensive power project experience and expertise. The Applicants developed the first utility-scale wind project in Utah and ultimately developed 160 MW of wind projects in WY and UT. The Applicants also developed a new technology wind turbine tower ("Space Frame Tower") with DOE support which they subsequently sold to GE. The Applicants are currently working with potential Project off-takers/potential owners. There are a variety of funding sources that the Applicants are confident they can access based on prior powergen industry experience.

## EXHIBIT 3 – PROJECT MAPS

*Exhibit 3 must include a map or series of maps, to be prepared on United States Geological Survey topographic quadrangle sheets or similar topographic maps of a State agency, if available. The maps need not conform to the precise specifications of §4.39 (a) and (b). If the scale of any base map is not sufficient to show clearly and legibly all of the information required by this paragraph, the maps submitted must be enlarged to a scale that is adequate for that purpose. (If Exhibit 3 comprises a series of maps, it must also include an index sheet showing, by outline, the parts of the entire project covered by each map of the series.) The maps must show:*

*(1) The location of the project as a whole with reference to the affected stream or other body of water and, if possible, to a nearby town or any permanent monuments or objects that can be noted on the maps and recognized in the field;*

*(2) The relative locations and physical interrelationships of the principal project features identified under paragraph (b) of this section;*

*(3) A proposed boundary for the project, enclosing:*

*(i) All principal project features identified under paragraph (b) of this section, including but not limited to any dam, reservoir, water conveyance facilities, powerplant, transmission lines, and other appurtenances; if the project is located at an existing Federal dam, the Federal dam and impoundment must be shown, but may not be included within the project boundary;*

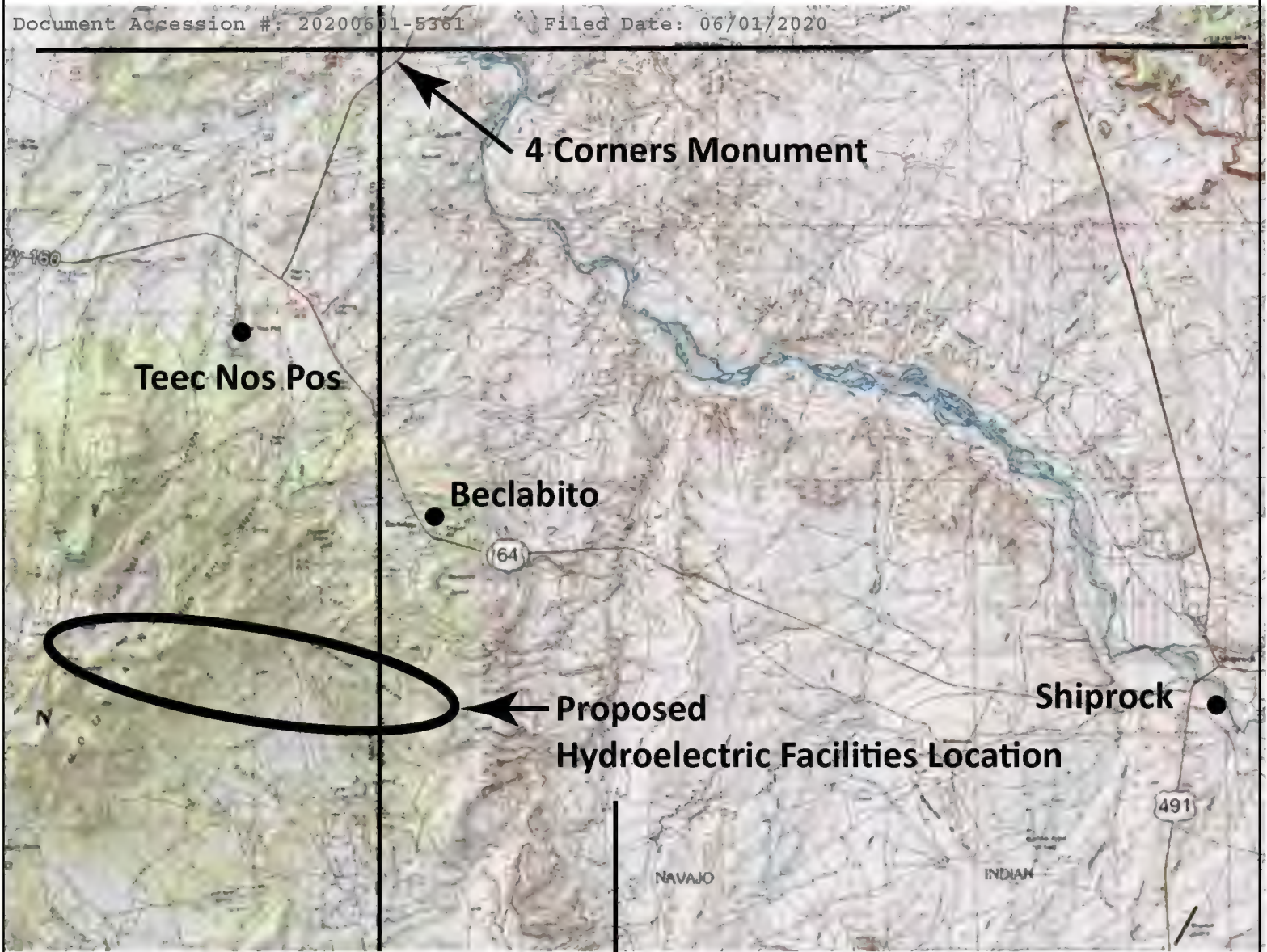
*(ii) Any non-Federal lands and any public lands or reservations of the United States [see 16 U.S.C. 796 (1) and (2)] necessary for the purposes of the project. To the extent that those public lands or reservations are covered by a public land survey, the project boundary must enclose each of and only the smallest legal subdivisions (quarter-quarter section, lots, or other subdivisions, identified on the map by subdivision) that may be occupied in whole or in part by the project.*

*(4) Areas within or in the vicinity of the proposed project boundary which are included in or have been designated for study for inclusion in the National Wild and Scenic Rivers System; and*

*(5) Areas within the project boundary that, under the provisions of the Wilderness Act, have been:*

- (i) Designated as wilderness area;*
- (ii) Recommended for designation as wilderness area; or*
- (iii) Designated as wilderness study area.*



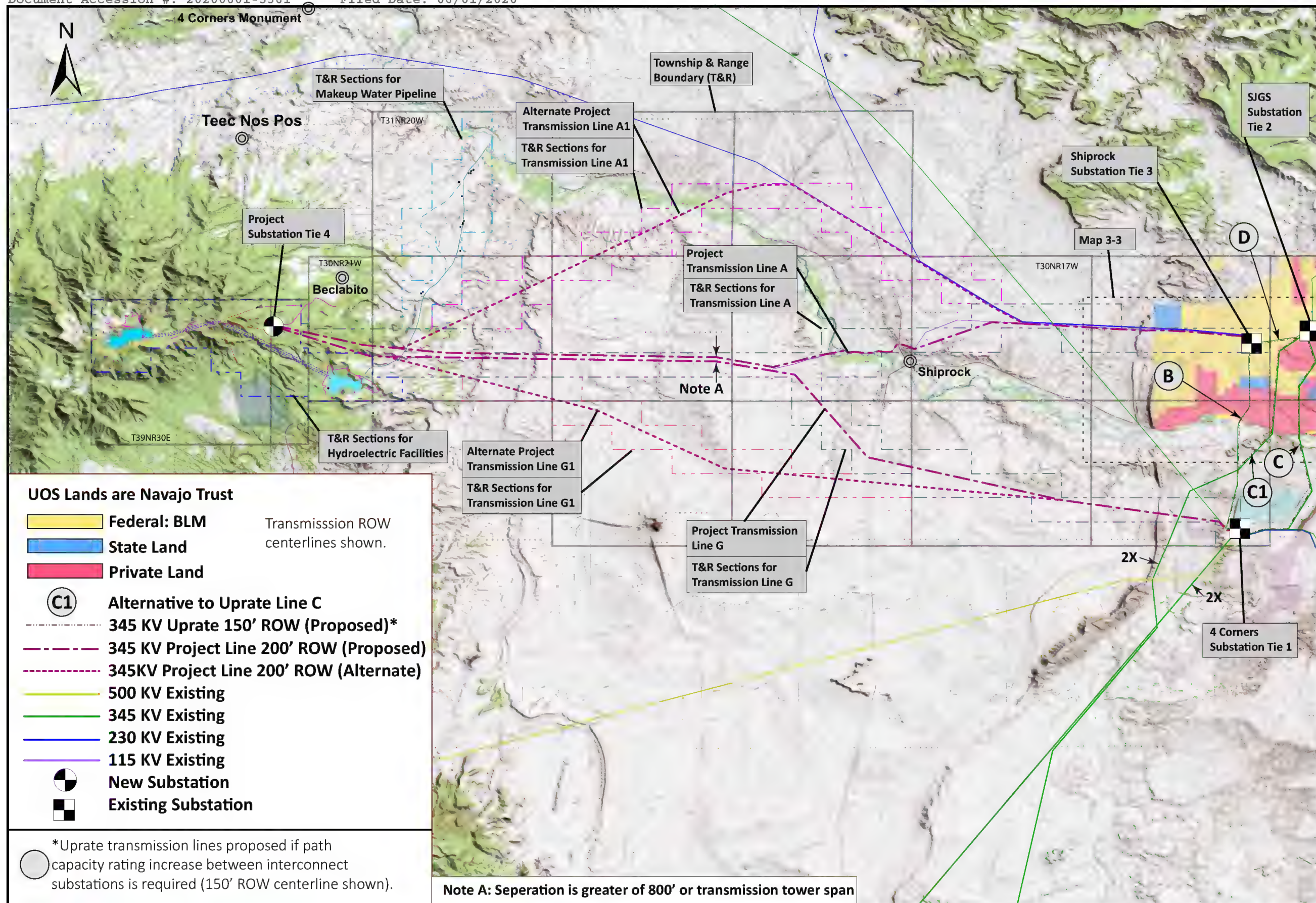


## Proposed Beclabito Hydroelectric Energy Storage Center

General Location Map

Exhibit 3-1

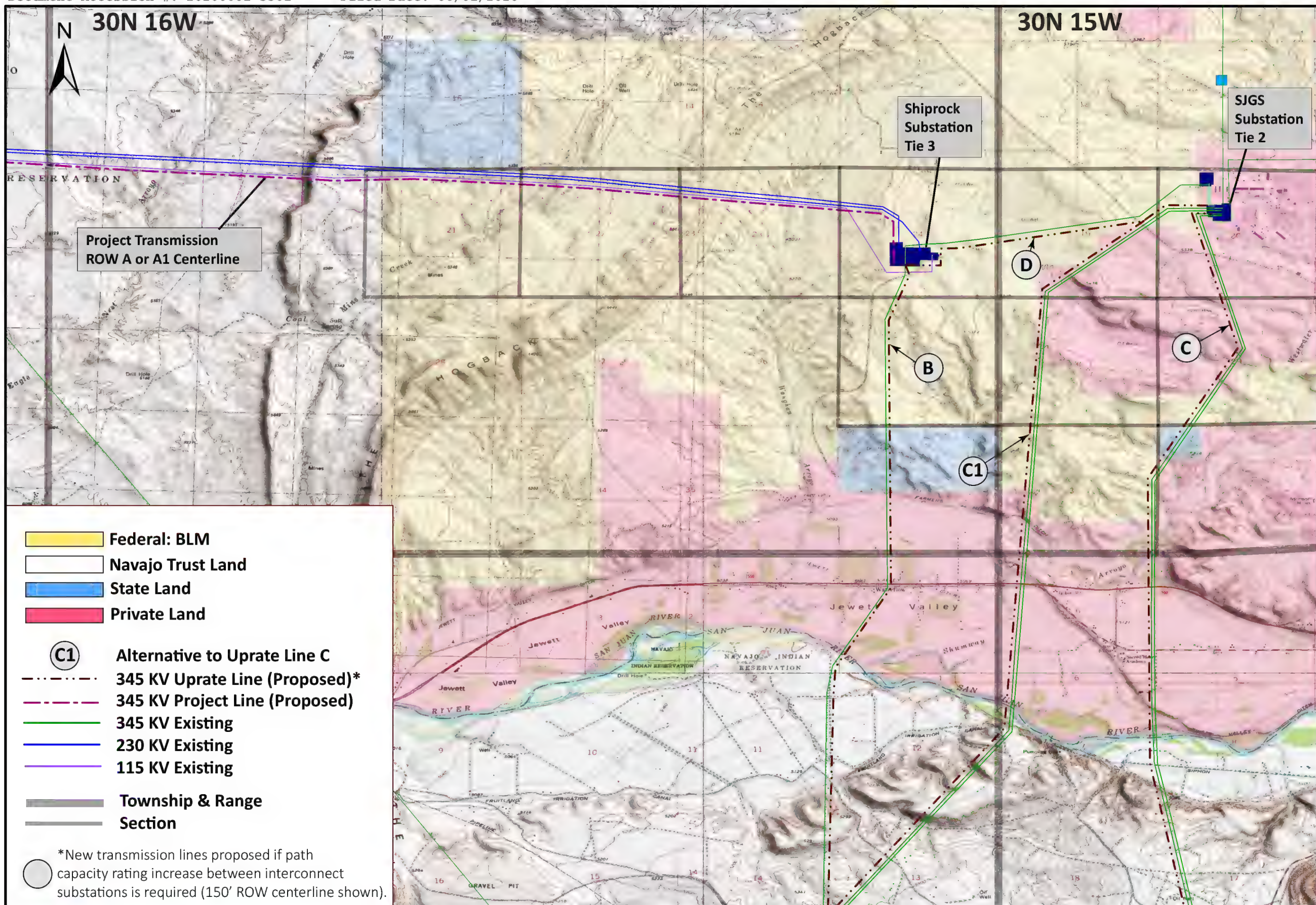




0 2.75 5.5 11 16.5 22 Miles

Proposed Beclabito Hydroelectric Energy Storage Center  
Transmission & Makeup Water Pipeline ROWs, & Land Ownership  
Exhibit 3-2

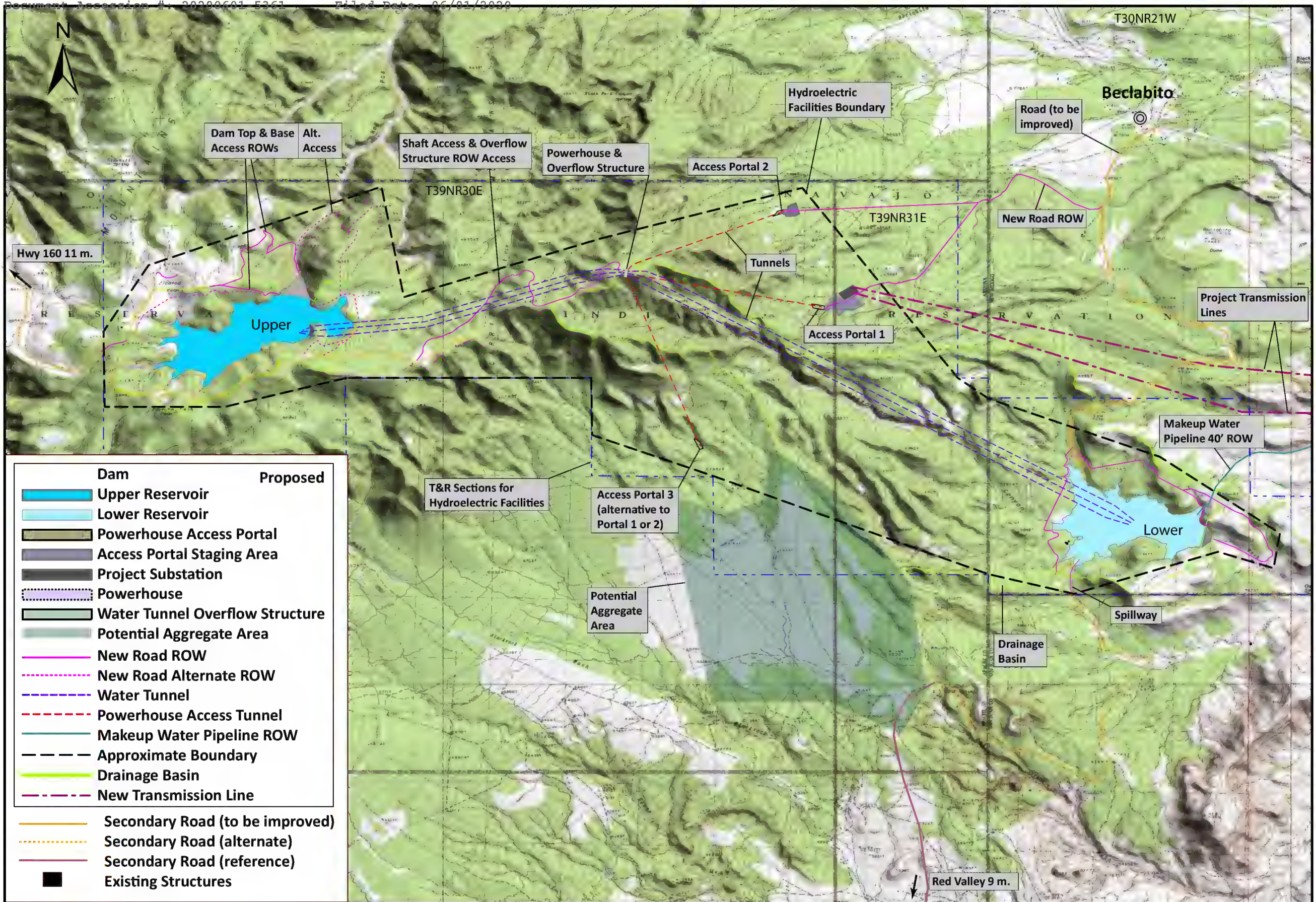




0 0.5 1 2 3 4 Miles

Proposed Beclabito Hydroelectric Energy Storage Center  
BLM, State, & Private Land Ownership  
Exhibit 3-3

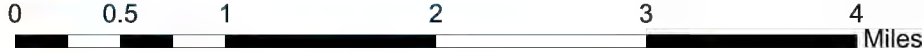
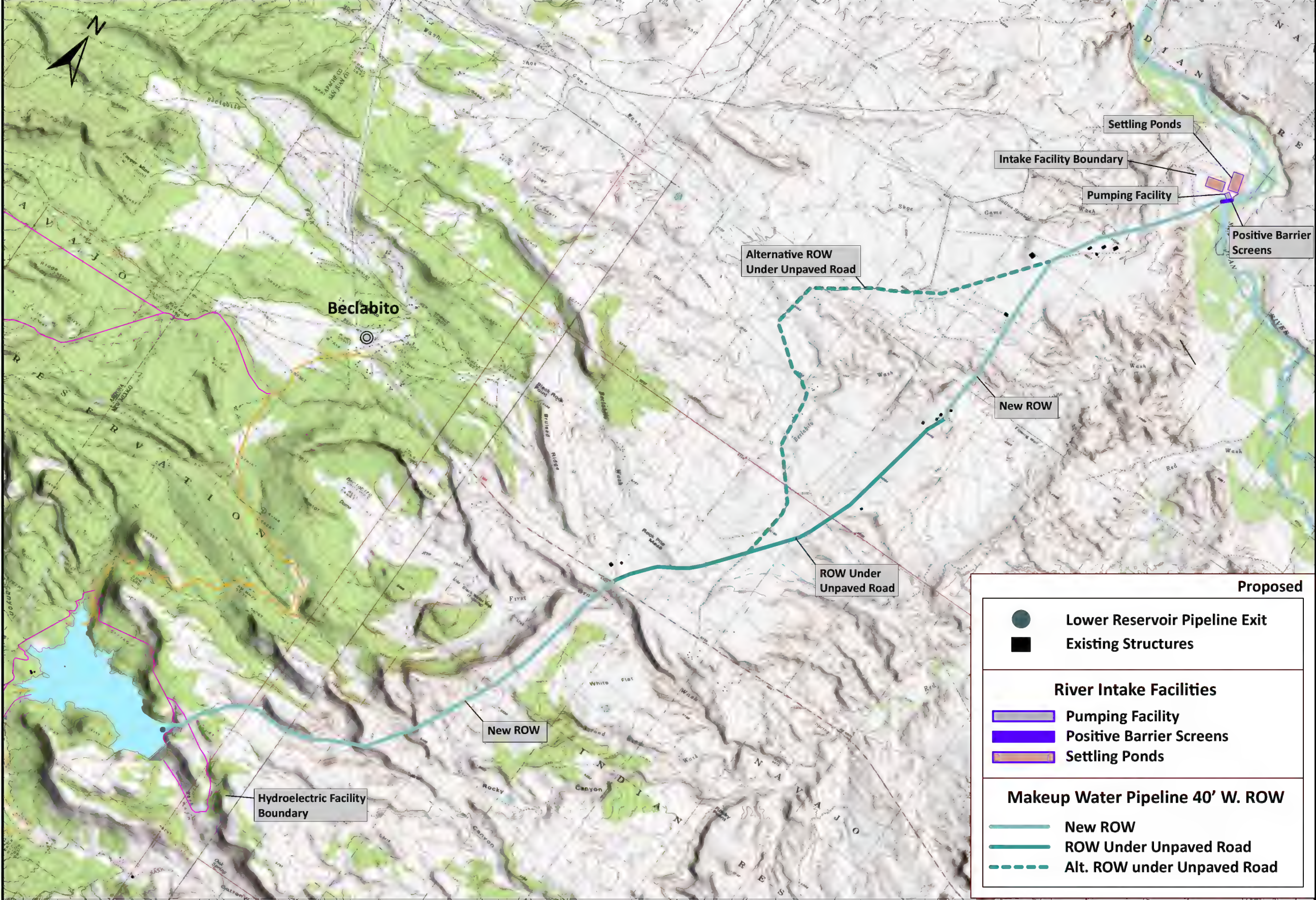




0 0.5 1 2 3 4 Miles

Proposed Beclabito Hydroelectric Energy Storage Center  
Hydroelectric Facilities Boundary  
Exhibit 3-4





Proposed Beclabito Hydroelectric Energy Storage Center  
Lower Reservoir Makeup Water Pipeline and Intake Facilities  
Exhibit 3-5



**LAND DESCRIPTION – FORM FERC-587**

Form FERC-587  
OMB No. 1902-0145  
(Expires 10/31/2018)

**LAND DESCRIPTION**

**Public Land States**  
**(Rectangular Survey System Lands)**

1. STATE: **Arizona**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T39N**4. RANGE: **R30E**5. MERIDIAN: **Gila Salt River**

6. Check one:

Check one:

☐ License☒ Pending☒ Preliminary Permit☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6 BIA Exhibit 3-4	5 BIA Exhibit 3-4	4 BIA Exhibit 3-4	3 BIA Exhibit 3-4	2 BIA Exhibit 3-4	1 BIA Exhibit 3-4
7 BIA Exhibit 3-4	8 BIA Exhibit 3-4	9 BIA Exhibit 3-4	10 BIA Exhibit 3-4	11 BIA Exhibit 3-4	12 BIA Exhibit 3-4
18 BIA Exhibit 3-4	17 BIA Exhibit 3-4	16	15	14 BIA Exhibit 3-4	13 BIA Exhibit 3-4
19	20	21	22	23	24 BIA Exhibit 3-4
30	29	28	27	26	25
31	32	33	34	35	36

6. Contact: Tracy Livingston  
Phone: (505) 225-1758  
June 1, 2020

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **Arizona**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T39N**4. RANGE: **R31E**5. MERIDIAN: **Gila Salt River**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6 BIA Exhibit 3-4	5	4	3	2	1
7 BIA Exhibit 3-4 Exhibit 3-2	8 BIA Exhibit 3-4 Exhibit 3-2	9	10	11	12
18 BIA Exhibit 3-4	17 BIA Exhibit 3-4	16	15	14	13
19 BIA Exhibit 3-4	20 BIA Exhibit 3-4	21	22	23	24
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31	32	33	34	35	36

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June 1, 2020

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

Form FERC-587  
OMB No. 1902-0145  
(Expires 10/31/2018)

**LAND DESCRIPTION**

**Public Land States**  
**(Rectangular Survey System Lands)**

1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R21W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 BIA Exhibit 3-4 Exhibit 3-2	23 BIA Exhibit 3-4 Exhibit 3-2	24 BIA Exhibit 3-4 Exhibit 3-2
30	29	28	27 BIA Exhibit 3-4	26 BIA Exhibit 3-4	25 BIA Exhibit 3-4 Exhibit 3-2 Exhibit 3-5
31	32	33	34 BIA Exhibit 3-4	35 BIA Exhibit 3-4	36 BIA Exhibit 3-4 Exhibit 3-5

6. Contact: Tracy Livingston  
Phone: (505) 225-1758  
June 1, 2020

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R20W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License

Check one:

☒ Pending☒ Preliminary Permit☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6 BIA Exhibit 3-4	5 BIA Exhibit 3-4	4 BIA Exhibit 3-5	3	2	1 BIA Exhibit 3-2
7	8 BIA Exhibit 3-5	9 BIA Exhibit 3-5	10	11 BIA Exhibit 3-2	12 BIA Exhibit 3-2
18	17 BIA Exhibit 3-5	16 BIA Exhibit 3-2	15 BIA Exhibit 3-2	14 BIA Exhibit 3-2	13
19 BIA Exhibit 3-2	20 BIA Exhibit 3-2 Exhibit 3-5	21 BIA Exhibit 3-2	22 BIA Exhibit 3-2	23	24
30 BIA Exhibit 3-2 Exhibit 3-5	29 BIA Exhibit 3-2 Exhibit 3-5	28 BIA Exhibit 3-2	27 BIA Exhibit 3-2	26 BIA Exhibit 3-2	25 BIA Exhibit 3-2
31 BIA Exhibit 3-4	32	33	34 BIA Exhibit 3-2	35 BIA Exhibit 3-2	36 BIA Exhibit 3-2

6. Contact: Tracy Livingston  
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June 1, 2020

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T31N**4. RANGE: **R20W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6	5	4	3 BIA Exhibit 3-5	2	1
7	8	9	10 BIA Exhibit 3-5	11	12
18	17	16 BIA Exhibit 3-5	15 BIA Exhibit 3-5	14	13
19	20	21 BIA Exhibit 3-5	22 BIA Exhibit 3-5	23	24
30	29 BIA Exhibit 3-5	28 BIA Exhibit 3-5	27 BIA Exhibit 3-5	26	25
31	32 BIA Exhibit 3-5	33 BIA Exhibit 3-5	34	35	36

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June 1, 2020

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**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R19W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6 BIA Exhibit 3-2	5 BIA Exhibit 3-2	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30 BIA Exhibit 3-2	29 BIA Exhibit 3-2	28 BIA Exhibit 3-2	27 BIA Exhibit 3-2	26 BIA Exhibit 3-2	25 BIA Exhibit 3-2
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June 1, 2020

This information is necessary for the Federal Energy Regulatory Commission to discharge its responsibilities under Section 24 of the Federal Power Act.

**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R18W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6	5	4	3	2	1 BIA Exhibit 3-2
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22 BIA Exhibit 3-2	23 BIA Exhibit 3-2	24 BIA Exhibit 3-2
30 BIA Exhibit 3-2	29 BIA Exhibit 3-2 9	28 BIA Exhibit 3-2	27 BIA Exhibit 3-2	26 BIA Exhibit 3-2	25
31	32	33 BIA Exhibit 3-2	34	35	36

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June 1, 2020

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**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R17W**5. MERIDIAN: **New Mexico**

6. Check one:

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Section 6 BIA Exhibit 3-2	5 BIA Exhibit 3-2	4	3	2	1
7	8 BIA Exhibit 3-2	9 BIA Exhibit 3-2	10	11	12
18	17	16 BIA Exhibit 3-2	15 BIA Exhibit 3-2	14 BIA Exhibit 3-2	13 BIA Exhibit 3-2
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June 1, 2020

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Form FERC-587  
OMB No. 1902-0145  
(Expires 10/31/2018)

### LAND DESCRIPTION

#### Public Land States (Rectangular Survey System Lands)

1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R16W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable**

### 5. EXHIBIT SHEET NUMBERS OR LETTERS

Section 6	5	4	3	2	1
7	8	9	10	11	12
18 BIA Exhibit 3-2	17	16	15	14	13
19 BIA Exhibit 3-2	20 BIA Exhibit 3-2	21 BIA Exhibit 3-2	22	23	24
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June 1, 2020

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**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T29N**4. RANGE: **R19W**5. MERIDIAN: **New Mexico**

6. Check one:

☐ License☒ Preliminary Permit

Check one:

☒ Pending☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6 BIA Exhibit 3-2	5 BIA Exhibit 3-2	4 BIA Exhibit 3-2	3	2	1
7	8	9 BIA Exhibit 3-2	10 BIA Exhibit 3-2	11 BIA Exhibit 3-2	12
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June 1, 2020

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19 BIA Exhibit 3-2	20 BIA Exhibit 3-2	21 BIA Exhibit 3-2	22 BIA Exhibit 3-2	23	24
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Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21 BLM Exhibit 3-2	22 BLM Exhibit 3-2	23 BLM Exhibit 3-2	24 BLM Exhibit 3-2 Exhibit 3-3
30	29	28	27	26	25 BLM Exhibit 3-3
31	32	33	34	35	36

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June 1, 2020

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**LAND DESCRIPTION****Public Land States  
(Rectangular Survey System Lands)**1. STATE: **New Mexico**2. FERC PROJECT NO.: **Not applicable**3. TOWNSHIP: **T30N**4. RANGE: **R15W**5. MERIDIAN: **New Mexico**

6. Check one:

Check one:

☐ License☒ Pending☒ Preliminary Permit☐ IssuedIf preliminary permit is issued, give expiration date: **Not applicable****5. EXHIBIT SHEET NUMBERS OR LETTERS**

Section 6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19 BLM Exhibit 3-3	20 BLM Exhibit 3-3	21	22	23	24
30 BLM Exhibit 3-3	29 BLM Exhibit 3-3	28	27	26	25
31 BLM Exhibit 3-3	32	33	34	35	36

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Document Content(s)

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